

FORM PTO-1390 (REV 10-94)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 02-119
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (If known, see 37 C.F.R.1.5) 10/070063
INTERNATIONAL APPLICATION NO. PCT/EP00/06505	INTERNATIONAL FILING DATE July 8, 2000	PRIORITY DATE CLAIMED September 9, 1999	
TITLE OF INVENTION DEVICE FOR THE DISPLACEMENT, IN PARTICULAR, THE ROTATIVE OR LINEAR...			
APPLICANT(S) FOR DO/EO/US Hans-Hermann Spohr et al.			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> has been transmitted by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been transmitted by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input type="checkbox"/> have not been made and will not be made. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). <input checked="" type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). 			
Items 11. to 16. below concern document(s) or information included:			
<ol style="list-style-type: none"> <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. <input type="checkbox"/> A substitute specification. <input type="checkbox"/> A change of power of attorney and/or address letter. <input checked="" type="checkbox"/> Other items or information: Applicants claim small entity status. Amended Pages 1, 2 and 2a 			

page 1 of 2

Express Mail No.:
EL398537655US

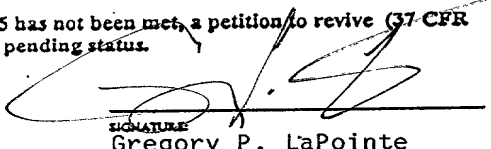
I hereby certify that this correspondence is being
deposited with the United States Postal Service as
Express Mail in an envelope addressed to: Commissioner
of Patents and Trademarks, Washington, D.C. 20231

(January 1995)

on February 27, 2002

(Date of Deposit)
Rachel Piscitelli

Signature and Reg. No. of Attorney
Signature
February 27, 2002
Date of Signature

U.S. APPLICATION NO. (37 CFR 1.53) 107070065		INTERNATIONAL APPLICATION NO. PCT/EP00/06505		ATTORNEY'S DOCKET NUMBER 02-119	
17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO..... \$890.00 International preliminary examination fee paid to USPTO (37 CFR 1.482)..... \$660.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))... \$730.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO..... \$1040.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)..... \$92.00 ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 890.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	16 -20 =		X \$18		
Independent claims	1 -3 =		X \$84		
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+\$270	
TOTAL OF ABOVE CALCULATIONS =				\$ 890.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$ 445.00	
SUBTOTAL =				\$ 445.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
TOTAL NATIONAL FEE =				\$ 445.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$ 40.00	
TOTAL FEES ENCLOSED =				\$ 485.00	
				Amount to be: refunded \$ charged \$	
a. <input checked="" type="checkbox"/> A check in the amount of \$ 485.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-0184. A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: GREGORY P. LAPOINTE ZACHMAN & LAPOINTE, P.C. 900 CHAPEL ST., SUITE 1201 NEW HAVEN, CT 06510-2802				SIGNATURE  NAME Gregory P. LaPointe REGISTRATION NUMBER 28,395	

Form PTO-1390 (REV. 10-94) page 2 of 2

Express Mail No.:
EL398537655US

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231

on February 27, 2002
 (Date of Deposit)
Rachel Piscitelli
 Name and Reg. No. of Applicant
Rachel Piscitelli
 Signature
February 27, 2002
 Date of Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Hans-Hermann Spohr et al. Docket No.: 02-119
Serial No.: Examiner :
Filed : Art Unit :
PCT No. : PCT/EP00/06505
IFD : July 8, 2000
For : DEVICE FOR THE DISPLACEMENT, IN PARTICULAR, THE
ROTATIVE OR LINEAR DISPLACEMENT OF AN ACTIVE LOAD

Suite 1201
900 Chapel Street
New Haven, CT 06510-2802

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents & Trademarks
United States Patent & Trademark Office
Washington, D.C. 20231

Dear Sir:

In the above-identified application for United States patent,
please amend as follows.

IN THE CLAIMS

Please amend the claims as follows.

4. (Amended) The device as claimed in claim 2, characterized in that power and/or signals can be transmitted bidirectionally from the primary coil (9) from or to an external control system (13).

5. (Amended) The device as claimed in claim 2, characterized in that the drive unit (2.1) is arranged in the housing (1) as an electric motor (3), which is connected to the carrier (5.1), especially the output drive flange (6), via a shaft (4).

6. (Amended) The device as claimed in claim 1, characterized in that a transmission (11) is provided between the drive unit (2.1) and the carrier (5.1), especially the output drive flange (6).

8. (Amended) The device as claimed in claim 2, characterized in that the secondary coil (10) is firmly connected to the carrier (5), especially the output drive flange (6).

9. (Amended) The device as claimed in claim 6, characterized in that the output drive flange (6) on the shaft (4) can be driven about an axis (A), it being possible for the secondary coil (10) to be rotated radially about the axis (A) with respect to the primary coil (9), and connected directly or indirectly to the output drive flange (6).

10. (Amended) The device as claimed in claim 1, characterized in that the drive unit (2.2) is designed as a linear element (14), especially a linear motor.

11. (Amended) The device as claimed in claim 1, characterized in that the drive unit (2.2) is designed to be rectilinear, curve-like, loop-like, arcuate and circular, on which the platform (15) can be moved, especially driven in a guided manner.

12. (Amended) The device as claimed in claim 10, characterized in that the drive unit (2.2), especially the linear element (14), is assigned to the primary coil (9) as a linear primary coil (9).

13. (Amended) The device as claimed in claim 2, characterized in that a secondary coil (10) is assigned to the carrier (5.2), especially the platform (15), and is arranged close to the linear primary coil (9) but without contact.

14. (Amended) The device as claimed in claim 2, characterized in that by means of linear movement of the carrier (5.2), especially the platform (15) with integrated secondary coil (10), along the drive unit (2), power and/or signals can be transmitted bidirectionally and without contact to or from the primary coil (9) or an active load (12).

15. (Amended) The device as claimed in claim 2, characterized in that the drive unit (2.2) and the primary coil (9) are arranged linearly, parallel to each other.

16. (Amended) The device as claimed in claim 2, characterized in that the drive unit (2.2) and the primary coil (9) are designed to be arcuate, linear, loop-like, circular.

IN THE ABSTRACT

Please add the following Abstract as a separate page after the claims.

ABSTRACT

The invention relates to a device for the displacement, in particular, the rotative or linear displacement of an active load or any object on a support, in particular, on a driven flange or platform, comprising a drive unit for displacing the active load. The invention is characterised in that energy and/or signals can be transmitted without contact to or from the load, using at least one transmission device.

REMARKS

Amendments have been made to the claims to remove the multiple dependencies and an Abstract has been added in order to conform with U.S. practice. An early action on the merits is respectfully requested.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231

on February 27, 2002

(Date of Deposit)

Rachel Piscitelli

Name and Reg. No. of Attorney

Rachel Piscitelli
Signature
February 27, 2002
Date of Signature

Respectfully submitted,

Hans-Hermann Spohr et al.

Gregory P. LaPointe
By
Gregory P. LaPointe
Attorney for Applicants
Telephone - (203) 777-6628

Date: February 27, 2002

Express Mail No.:
EL398537655US

Version with markings to show changes made to claims

4. (Amended) The device as claimed in claim 2 [or 3], characterized in that power and/or signals can be transmitted bidirectionally from the primary coil (9) from or to an external control system (13).

5. (Amended) The device as claimed in [at least one of claims 2 to 4] claim 2, characterized in that the drive unit (2.1) is arranged in the housing (1) as an electric motor (3), which is connected to the carrier (5.1), especially the output drive flange (6), via a shaft (4).

6. (Amended) The device as claimed in [at least one of claims 1 to 5] claim 1, characterized in that a transmission (11) is provided between the drive unit (2.1) and the carrier (5.1), especially the output drive flange (6).

8. (Amended) The device as claimed in [at least one of claims 2 to 7] claim 2, characterized in that the secondary coil (10) is firmly connected to the carrier (5), especially the output drive flange (6).

9. (Amended) The device as claimed in [at least one of claims 6 to 8] claim 6, characterized in that the output drive flange (6) on the shaft (4) can be driven about an axis (A), it being possible for the secondary coil (10) to be rotated radially about the axis (A) with respect to the primary coil (9), and connected directly or indirectly to the output drive flange (6).

10. (Amended) The device as claimed in [at least one of claims 1 to 9] claim 1, characterized in that the drive unit (2.2) is designed as a linear element (14), especially a linear motor.

11. (Amended) The device as claimed in [at least one of claims 1 to 10] claim 1, characterized in that the drive unit (2.2) is designed to be rectilinear, curve-like, loop-like, arcuate and circular, on which the platform (15) can be moved, especially driven in a guided manner.

12. (Amended) The device as claimed in claim 10 [or 11], characterized in that the drive unit (2.2), especially the linear element (14), is assigned to the primary coil (9) as a linear primary coil (9).

13. (Amended) The device as claimed in [at least one of claims 2 to 12] claim 2, characterized in that a secondary coil (10) is assigned to the carrier (5.2), especially the platform (15), and is arranged close to the linear primary coil (9) but without contact.

14. (Amended) The device as claimed in [at least one of claims 2 to 13] claim 2, characterized in that by means of linear movement of the carrier (5.2), especially the platform (15) with integrated secondary coil (10), along the drive unit (2), power and/or signals can be transmitted bidirectionally and without contact to or from the primary coil (9) or an active load (12).

15. (Amended) The device as claimed in [at least one of claims 2 to 14] claim 2, characterized in that the drive unit (2.2) and the primary coil (9) are arranged linearly, parallel to each other.

16. (Amended) The device as claimed in [at least one of claims 2 to 15] claim 2, characterized in that the drive unit (2.2) and the primary coil (9) are designed to be arcuate, linear, loop-like, circular.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



(43) Internationales Veröffentlichungsdatum
15. März 2001 (15.03.2001)

PCT

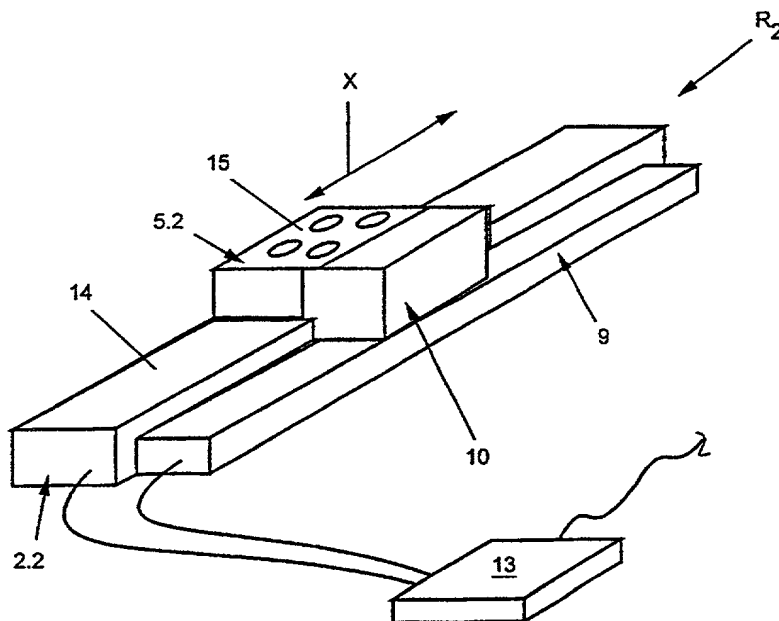
(10) Internationale Veröffentlichungsnummer
WO 01/18829 A1

- (51) Internationale Patentklassifikation⁷: H01F 38/14 (72) Erfinder; und
(21) Internationales Aktenzeichen: PCT/EP00/06505 (75) Erfinder/Anmelder (*nur für US*): SPOHR, Hans-Her-
(22) Internationales Anmeldedatum: 8. Juli 2000 (08.07.2000) mann [DE/DE]; Grüner Weg 23, D-75365 Calw (DE).
(25) Einreichungssprache: Deutsch WITTENSTEIN, Manfred [DE/DE]; Erlenbachweg 30,
(26) Veröffentlichungssprache: Deutsch D-97980 Bad Mergentheim (DE).
(30) Angaben zur Priorität: 199 43 047.0 9. September 1999 (09.09.1999) DE (74) Anwalt: WEISS, Peter; Zeppelinstrasse 4, D-78234 En-
(71) Anmelder (*für alle Bestimmungsstaaten mit Ausnahme von gen (DE).*
US): WITTENSTEIN GMBH & CO.KG [DE/DE]; Her- (81) Bestimmungsstaaten (*national*): JP, US.
renwiesenstrasse 7-9, D-97999 Igersheim (DE). (84) Bestimmungsstaaten (*regional*): europäisches Patent (AT,
Veröffentlicht: BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
— Mit internationalem Recherchenbericht. NL, PT, SE).

[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR THE DISPLACEMENT, IN PARTICULAR, THE ROTATIVE OR LINEAR DISPLACEMENT OF AN ACTIVE LOAD

(54) Bezeichnung: VORRICHTUNG ZUM BEWEGEN, INSBESONDERE ZUM ROTATIVEN ODER LINEAREN BEWEGEN EINER AKTIVEN LAST



(57) Abstract: The invention relates to a device for the displacement, in particular, the rotative or linear displacement of an active load (12) or any object on a support (5.1, 5.2), in particular, on a driven flange (6) or platform (15), comprising a drive unit (2.1, 2.2) for displacing the active load (12). The invention is characterised in that energy and/or signals can be transmitted without contact to or from the load (12), using at least one transmission device (8).

[Fortsetzung auf der nächsten Seite]

WO 01/18829 A1

WO 01/18829

PCT/EP00/06505

Device for moving an active load, especially rotationally or
linearly

The present invention relates to a device for moving an active load or any desired object, especially rotationally or linearly, on a carrier, especially an output drive flange or platform, with a drive unit for moving the active load.

Devices of this type are known on the market in an extremely wide range of forms and designs and are customary. They are used, for example, for the rotational movement of radar systems, guns, monitoring cameras or the like. More and more frequently, high requirements are placed on the power and data transmission from active loads and any desired objects which are seated on corresponding carriers. A transmission of power in this way is conventionally carried out with flexible cables or the like. This often leads to disruption, which is undesirable.

The present invention is therefore based on the object of providing a device of the type mentioned at the beginning which eliminates the aforementioned disadvantages and with which, in a precise and exact manner, data and/or power and any desired signals can be transmitted without disruption.

In order to achieve this object, power and/or signals can be transmitted without contact to or from the load, via at least one transmission device.

A transmission device of this type preferably has a primary coil and a secondary coil. The primary coil is substantially permanently connected to a housing or a drive unit, it being possible for a secondary coil, which is connected directly or indirectly to the carrier, to move with respect to this primary coil. In this way, the secondary coil can be moved rotationally or linearly with respect to the primary coil, in order to ensure power and/or signals for data transmission without contact and bidirectionally.

In this way, power and/or signals, even in the form of any desired data, can be transmitted in both directions to the carrier, that is to say to the active load or from the active load to a control system via the transmission device. Here, the carrier which holds the active load can be completely independent of its movement, which can be guided linearly or rotationally.

In this way, the lifetime of such a device for moving active loads, especially rotationally or linearly, can be increased considerably, since no cables or data cables can be damaged by mechanical effects.

In this case, active loads of an extremely wide type, for example radar systems, monitoring cameras, different weapon systems, can be fitted to an appropriate carrier. Furthermore, positioning times and the positioning accuracy in the case of very high accelerations can be improved

substantially, which improves the use of such a device considerably. In this case, such a device can be controlled very simply, for example from a conventional PC, it being possible in a simple way with this device for power and/or data to be supplied, which can then be transmitted without contact to the active load.

Of course, appropriate demodulation of the signals and/or power which is transmitted bidirectionally is carried out in the primary and secondary coils. In particular, the digital data and signal transmission is carried out completely without problems and very accurately.

Overall, the present invention provides a device which is used in an extremely wide range of fields.

Further advantages, features and details of the invention emerge from the following description of preferred exemplary embodiments and by using the drawings; in the latter:

Figure 1 shows a longitudinal section through a device for moving an active load or any desired object rotationally;

Figure 2 shows a perspective schematic view of a further exemplary embodiment of a device for moving an active load or any desired object linearly, corresponding to Figure 1.

According to Figure 1, a device R_1 according to the invention comprises a housing 1, which is preferably designed

like a cylinder. At one end, a drive unit 2.1, especially an electrically driven motor 3, is provided in the housing 1 and is connected to a shaft 4. At the end, the shaft 4 is connected to a carrier 5.1, especially an output drive flange 6, which is mounted outside the housing 1 such that it can rotate about an axis A. Appropriate sealing elements 7, such as a Simmer ring or the like, seal off the output drive flange 6 with respect to the housing 1. No contaminants can penetrate into the housing 1 from outside.

In the present invention, it is important that a transmission device 8 is inserted into the housing 1, between the drive unit 2.1 and the carrier 5.1. The transmission device 8 has a primary coil 9 which is preferably fixed with respect to the housing 1 and through which the shaft 4 passes.

A secondary coil 10 is arranged at a distance from the primary coil 9, without contact, such that it can rotate about the axis A and, directly or indirectly, is firmly connected to the output drive flange 6 of the carrier 5.1 so as to rotate with it.

If appropriate, as illustrated in the present exemplary embodiment, a transmission 11 can be inserted into the shaft 4, close to the carrier 5.1.

The transmission 11 is illustrated only schematically and transmits a drive movement of the drive unit 2.1 to the carrier 5.1.

In order that any desired active load 12, as indicated only symbolically, can be put into operation on the output drive flange 5.1, a supply of power is necessary. At the same time, the active load 12 is intended to be able to supply information and/or power to the device R_1 or to the stationary part of the housing 1 in a wire-free manner.

To this end, with the aid of a control system 13, which is connected to the drive unit 2.1 and/or the transmission device 8, electrical power and/or signals for controlling the active load 12 are transmitted bidirectionally to the secondary coil 10 and, from there, are transmitted directly to the active load 12, irrespective of any rotation.

The control system 13, which may be an external or internal component of the device R_1 , especially of the housing 1, is adjoined by the drive unit 2.1 and/or the transmission device 8.

Here, the control system 13 is used firstly to operate the transmission device 8 and/or the drive unit 2.1 and to transmit power and/or signals.

Likewise, information, for example in the form of electrical signals and/or power, can be transmitted from the active load 12 to the secondary coil 10 during the rotation of the carrier 5.1 around the axis 1. From the secondary coil 10, power and/or signals are transmitted without contact to the primary coil 9, it being possible for the information

and/or the power to be processed further by the control system 13. The active load 12 may be any desired object which, for example, needs power or supplies power. It can be, for example, generators of wind turbines, which accordingly supply power and have to be driven rotationally in order to set the blades. Furthermore, a monitoring camera, a radar system or a machine gun could be placed on the carrier 5.1 as the active load 12.

It is also conceivable, as the active load 12, to place a device R_1 described in this way at right angles or at any desired angle to the carrier 5.1, as appropriate, in order then to use said device, for example, in handling technology. Moreover, active loads 12 can also be linear units or the like. In particular as a result of the transmission of power and/or signals without contact, power can also be made available in a wire-free manner without difficulty, or power obtained from the active load 12 can be forwarded, said power being irrespective of any rotational movement. It is also possible for a large number of revolutions of the carrier 5.1 to be carried out without the power and/or signal transmission being impaired, since the secondary coil 10 can be moved with respect to the primary coil 9 in a manner rotationally symmetrical with the axis A, corresponding to the carrier 5.1.

In the exemplary embodiment of the invention according to Figure 2, a device R_2 is shown in which a drive

unit 2.2 is preferably designed as a linear element 14 or linear motor which moves a carrier 5.2, especially a platform 15, to and fro linearly in the direction of the double arrow X illustrated, for example by means of belts, spindles, pinions, racks or the like. In this case, the drive unit 2.2 is used in particular for the linear guidance of the carrier 5.2, in particular of the platform 15.

Different active loads 12, which are not illustrated here, can be fitted and arranged on the platform 15 in the manner described above, corresponding to the carrier 5.1. The drive unit 2.2 can be configured to be linear, rectilinear, arcuate, loop-like, circular, and guides the carrier 5.2, especially the platform 15, exactly and precisely.

In accordance with the linear arrangement of the drive unit 2.2, the primary coil 9 is arranged parallel to it. Accordingly, the primary coil 9 runs parallel to the drive unit 2.2 or is a component of the latter. The platform 15 is associated with the secondary coil 10, and transmits power and/or signals bidirectionally without contact to the primary coil 9.

During the linear movement of the carrier 5.2 along the linear drive unit 2.2, power and/or signals can be transmitted in the manner described above, bidirectionally and without contact, between the primary coil 9 and the movable secondary coil 10, for or from an active load 12.

1. The first step in the process of identifying a potential problem is to recognize the symptoms. This involves observing the behavior of the system and comparing it to the expected behavior. If there are any deviations, they should be noted and investigated further.

List of item numbers

- 1 Housing
2 Drive unit
3 Motor
4 Shaft
5 Carrier
6 Output drive flange
7 Sealing element
8 Transmission device
9 Primary coil
10 Secondary coil
11 Transmission
12 Load
13 Control system
14 Linear element
15 Platform
- R_1 Device
 R_2 Device
- A Axis
- X Direction of double arrow

Patent claims

1. A device for moving an active load (12) or any desired object, especially rotationally or linearly, on a carrier (5.1, 5.2), especially an output drive flange (6) or platform (15), with a drive unit (2.1, 2.2) for moving the active load (12),

characterized in that

power and/or signals can be transmitted without contact to or from the load (12), via at least one transmission device (8).

2. The device as claimed in claim 1, characterized in that the transmission device (8) comprises a primary coil (9) which is fixed with respect to a housing (1) and a secondary coil (10) which is fixed with respect to the carrier (5).

3. The device as claimed in claim 2, characterized in that the transmission of power and/or signals between the primary coil (9) and secondary coil (10) within the transmission device (8) is carried out without contact and bidirectionally.

4. The device as claimed in claim 2 or 3, characterized in that power and/or signals can be transmitted bidirectionally from the primary coil (9) from or to an external control system (13).

5. The device as claimed in at least one of claims 2 to 4, characterized in that the drive unit (2.1) is arranged in the housing (1) as an electric motor (3), which is

connected to the carrier (5.1), especially the output drive flange (6), via a shaft (4).

6. The device as claimed in at least one of claims 1 to 5, characterized in that a transmission (11) is provided between the drive unit (2.1) and the carrier (5.1), especially the output drive flange (6).

7. The device as claimed in claim 6, characterized in that the transmission (11) is connected to the output drive flange (6).

8. The device as claimed in at least one of claims 2 to 7, characterized in that the secondary coil (10) is firmly connected to the carrier (5), especially the output drive flange (6).

9. The device as claimed in at least one of claims 6 to 8, characterized in that the output drive flange (6) on the shaft (4) can be driven about an axis (A), it being possible for the secondary coil (10) to be rotated radially about the axis (A) with respect to the primary coil (9), and connected directly or indirectly to the output drive flange (6).

10. The device as claimed in at least one of claims 1 to 9, characterized in that the drive unit (2.2) is designed as a linear element (14), especially a linear motor.

11. The device as claimed in at least one of claims 1 to 10, characterized in that the drive unit (2.2) is designed to be rectilinear, curve-like, loop-like, arcuate and

circular, on which the platform (15) can be moved, especially driven in a guided manner.

12. The device as claimed in claim 10 or 11, characterized in that the drive unit (2.2), especially the linear element (14), is assigned to the primary coil (9) as a linear primary coil (9).

13. The device as claimed in at least one of claims 2 to 12, characterized in that a secondary coil (10) is assigned to the carrier (5.2), especially the platform (15), and is arranged close to the linear primary coil (9) but without contact.

14. The device as claimed in at least one of claims 2 to 13, characterized in that by means of linear movement of the carrier (5.2), especially the platform (15) with integrated secondary coil (10), along the drive unit (2), power and/or signals can be transmitted bidirectionally and without contact to or from the primary coil (9) or an active load (12).

15. The device as claimed in at least one of claims 2 to 14, characterized in that the drive unit (2.2) and the primary coil (9) are arranged linearly, parallel to each other.

16. The device as claimed in at least one of claims 2 to 15, characterized in that the drive unit (2.2) and the primary coil (9) are designed to be arcuate, linear, loop-like, circular.

1 / 2

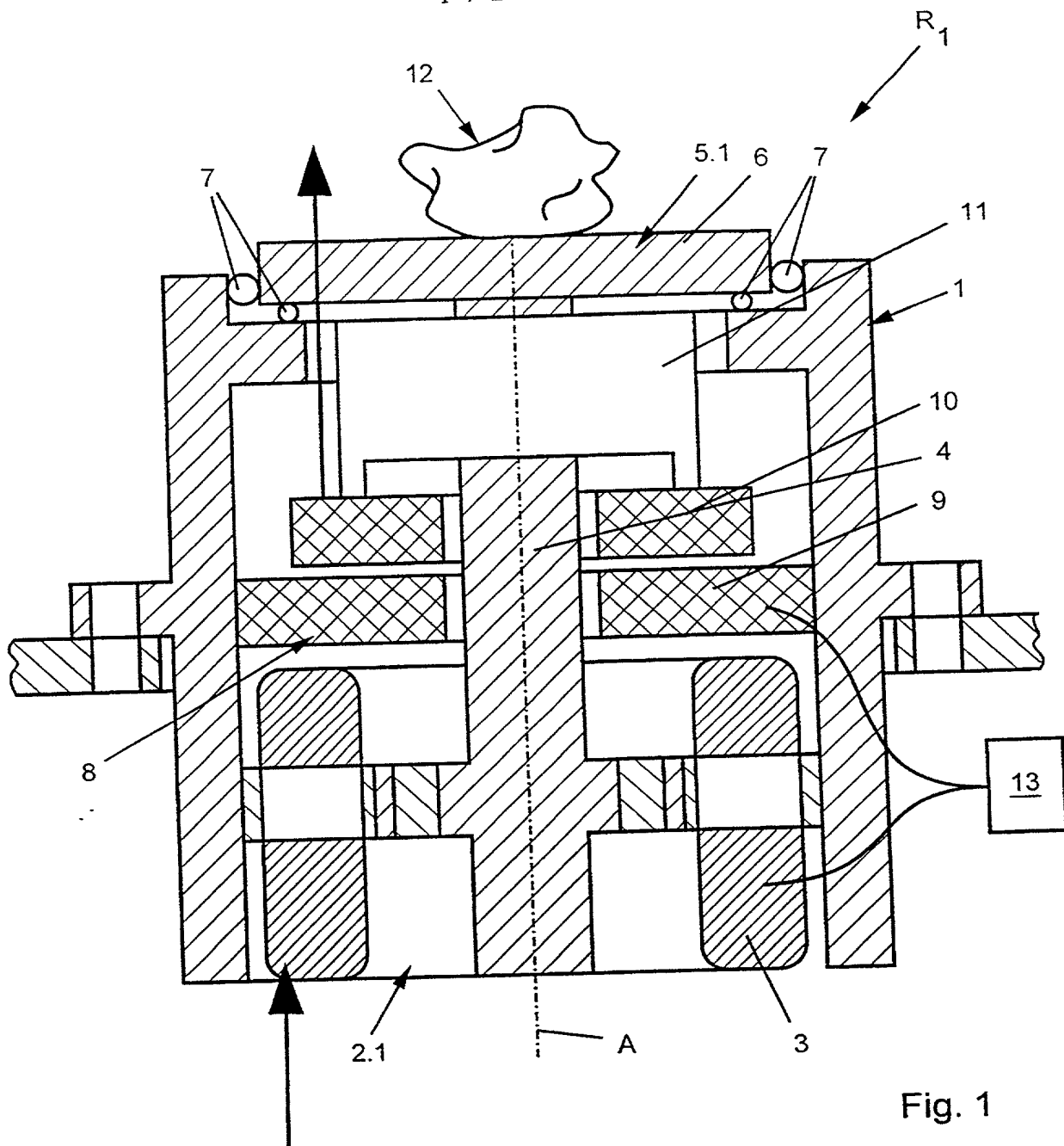


Fig. 1

2 / 2

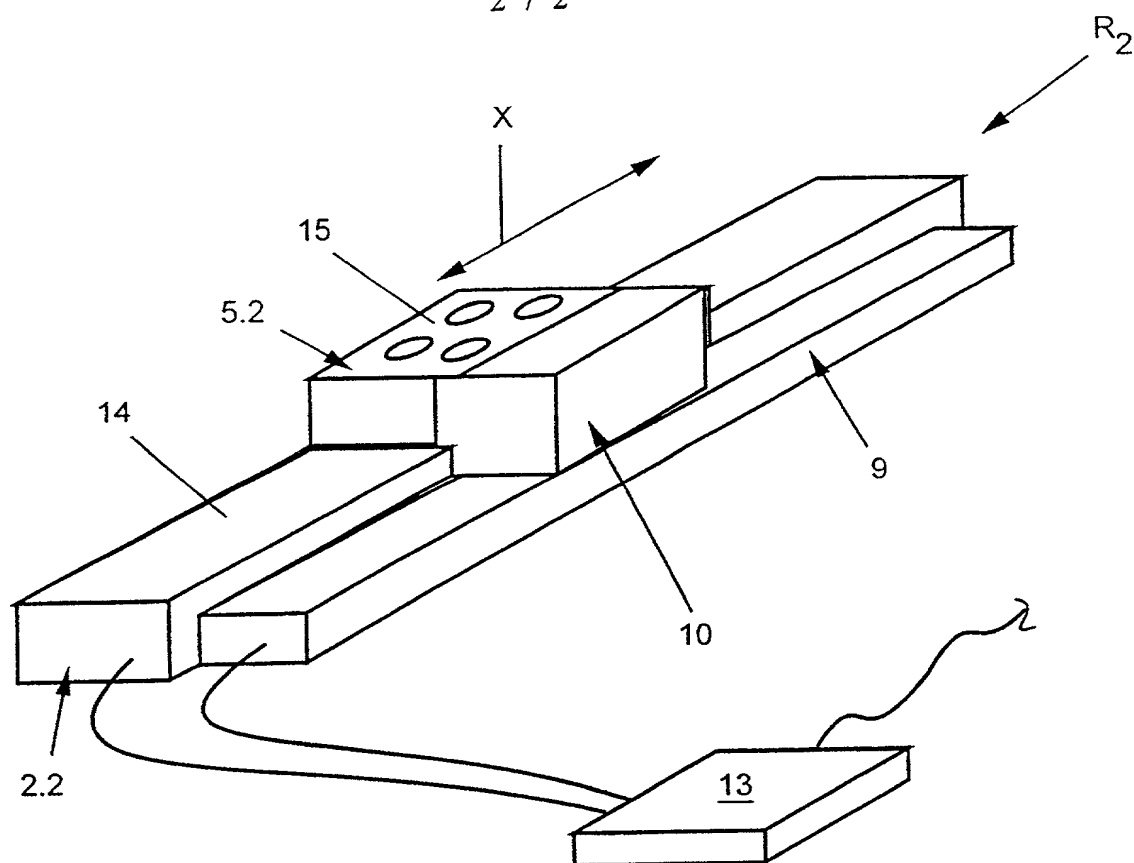


Fig. 2

SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b), or (c))

(a) ☒ is attached hereto.

NOTE: "The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;

"(2) name of inventor(s), and attorney docket number which was on the specification as filed;
or

"(3) name of inventor(s), and title which was on the specification as filed."

Notice of July 13, 1995 (1177 O.G. 60).

(b) ☐ was filed on _____, as ☐ Serial No. 0 / _____
or ☐ _____
and was amended on _____ (if applicable).

NOTE: Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 C.F.R. § 1.67.

NOTE: "The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(A) application number (consisting of the series code and the serial number, e.g., 08/123,456);

"(B) serial number and filing date;

"(C) attorney docket number which was on the specification as filed;

"(D) title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or

"(E) title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number, e.g., 08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration."

M.P.E.P. § 601.01(a), 7th Ed.

(c) ☒ was described and claimed in PCT International Application No. PCT/EP00/06505, filed on July 8, 2000 and as amended under PCT Article 19 on _____ (if any).

FORM 1-1

1-7

(Rev. 7-9-99 Pub. 605)

SUPPLEMENTAL DECLARATION (37 C.F.R. § 1.67(b))*(complete the following where a supplemental declaration is being submitted)*

- ☐ I hereby declare that the subject matter of the
- ☐ attached amendment
 - ☐ amendment filed on _____

was part of my/our invention and was invented before the filing date of the original application, above-identified, for such invention.

ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDIDATE

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

- ☒ and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and
- ☐ in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 C.F.R. § 1.98.

PRIORITY CLAIM (35 U.S.C. §§ 119(a)-(d))

NOTE: "The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. The claim for priority and the certified copy of the foreign application specified in 35 U.S.C. 119(b) must be filed in the case of an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, when specifically required by the examiner, and in all other situations, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(f). If the certified copy is not in the English language, a translation need not be filed except in the case of interference; or when necessary to overcome the date of a reference relied upon by the examiner, or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate." 37 C.F.R. § 1.55(e).

I hereby claim foreign priority benefits under Title 35, United States Code, §§ 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT International application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (c) or (e))

- (d) ☐ no such applications have been filed.
- (e) ☒ such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

**ALL FOREIGN APPLICATION(S), IF ANY, FILED MORE THAN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION**

NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete **ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION** for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. § 120.

POWER OF ATTORNEY

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(list name and registration number)

Robert H. Bachman (19,374), Gregory P. LaPointe (28,395),
Barry L. Kelmacher (29,999), and George A. Coury (34,309),
all of Bachman & LaPointe, P.C., 900 Chapel Street, Suite
1201, New Haven, CT 06510-2802

(check the following item, if applicable)

- ☒ I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.
- ☐ Attached, as part of this declaration and power of attorney, is the authorization of the above-named practitioner(s) to accept and follow instructions from my representative(s).

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS TO:
(Name and telephone number)

- X** Address
Bachman & LaPointe, P.C.
900 Chapel Street, Suite 1201
New Haven, CT 06510-2802

Gregory P. LaPointe
(203) 777-6628, ext. 111

- ☐ Customer Number _____

REPORT

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other documents.

NOTE: Each inventor must be identified by full name, including the family name, and at least one given name without abbreviation together with any other given name or initial, and by his/her residence, post office address and country of citizenship. 37 CFR § 1.63(a)(3).

NOTE: Inventors may execute separate declarations/oaths provided each declaration/oath sets forth all the inventors. Section 1.63(a)(3) requires that a declaration/oath, *inter alia*, identify each inventor and prohibits the execution of separate declarations/oaths which each sets forth only the name of the executing inventor. 62 Fed. Reg. 53,131, 53,142, October 10, 1997.

Full name of sole or first inventor

Hans-Hermann

Spohr

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date February 5, 2002

Country of Citizenship

Germany

Residence Gruner Weg 23, D-75365 Calw, Germany

Post Office Address same

DEX

Full name of second joint inventor, if any

Manfred

Wittenstein

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date 5.2.02

Country of Citizenship

Germany

Residence Erlenbachweg 30, D-97980 Bad Mergentheim, Germany

Post Office Address same

DEX

Full name of third joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date

Country of Citizenship

Residence

Post Office Address

(Rev. 7-99 Pub. 605)

FORM 1-1

-11

*(check proper box(es) for any of the following added page(s)
that form a part of this declaration)*

- ☐ Signature for fourth and subsequent joint inventors. Number of pages added _____

* * *

- ☐ Signature by administrator(trix), executor(trix) or legal representative for deceased or incapacitated inventor. Number of pages added _____

* * *

- ☐ Signature for inventor who refuses to sign or cannot be reached by person authorized under 37 CFR 1.47. Number of pages added _____

* * *

- ☐ Added page for signature by one joint inventor on behalf of deceased inventor(s) where legal representative cannot be appointed in time. (37 CFR 1.47)

* * *

- ☐ Added pages to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (C-I-P) application.

☐ Number of pages added _____

* * *

- ☐ Authorization of practitioner(s) to accept and follow instructions from representative.

* * *

*(if no further pages form a part of this Declaration,
then end this Declaration with this page and check the following item)*

- ☒ This declaration ends with this page.

20220620 15:00:00